D. Resource Elements

The following are proposed objectives and actions for physical, biotic and cultural resources. Actions items are prioritized in the Plan Operation section. Priority will generally be given to inventory, monitoring and evaluation in order to gather information necessary to appropriately implement other management actions.

1. Geology and Paleontology

The CPNA provides a wealth of geologic and paleontologic research opportunities. Past geologic research has included geologic mapping, trenching of the San Andreas Fault and fossil rich sites and geophysical investigations. In spite of the advances made by research efforts, much remains to be learned. Geologic mapping is incomplete for the CPNA. Many questions concerning the San Andreas Fault's movements and predictability are unanswered. Pollen core samples from sediments within Soda Lake may help reconstruct climatic and biotic history. Little paleontological research has been conducted, but the area shows a high potential for significant discoveries. Future research will likely be initiated by the scientific community rather than the managing partners.

Most of the geologic research, mapping and geophysical surveys, results in minimum surface disturbance. Other research methods may require temporary or permanent placement of geophysical equipment, or trenching and drilling shallow holes with truck mounted rigs. Seismic and other geophysical surveys may cover a relatively large area, but actual surface disturbance is minimal.

Finally some geologic research activities may impact an individual site of less than 5 acres for a period of several years, such as a deep observation well drilled adjacent to the San Andreas fault. Less impacting is the drilling of multiple shallow observation wells along the fault.

Goal 1: Increase the understanding of the geology and paleontology of the CPNA.

Objective 1.1: Continue research into the geology and paleontology of the CPNA. (Refer to research section III, F.2.a.)

Action 1.1a: Develop research priorities. The managing partners and invited experts will emphasize those data needs most pertinent to management priorities.

Action 1.1b: Solicit high priority research projects.

Action 1.1c: Evaluate unsolicited research proposals to determine consistency with management objectives.

Objective 1.2: Compile existing geologic research. Data, reports and maps should be made available to managing partners, researchers, and other interested public.

Action 1.2a: Maintain duplicate copies of all reports - one on the CPNA and another in the BLM office, Bakersfield. If feasible incorporate data into the existing geographical information system (GIS) including geologic mapping, geologic features such as fossil sites and locations of type fossils and type areas of geologic formations.

Potential Impact: Minimal general surface disturbing impacts are likely.

Mitigation Measure: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.

Potential Impact: Drilling a very deep hole may result in a two year surface disturbance of a maximum of five acres.

Mitigation: The surface disturbance will be temporary. An EA will require the site to be fully reclaimed.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The mitigation measures described for general wildlife harassment impacts and standard operation procedures should be adequate for the minimal level of disturbance anticipated.

2. Soil, Air, Hydrology

a. Soil

A wide variety of soil types partially account for the unique vegetation of the area. Several types are highly erodible and present challenges to management, particularly as a result of construction activities.

Goal 1: Maintain or achieve upland soil resources in proper functioning condition to allow for maintenance or development of natural plant communities.

Objective 1.1: Evaluate erosion problems, identify corrective actions needed and monitor soil resources throughout the CPNA.

Action 1.1a: Evaluate upland soils for erosion potential and map as proper functioning, at risk or nonfunctioning (Federal Register Volume 59, Number 59, 4180.2).

Action 1.1b: Develop strategies to improve conditions on soils that are eroding. Priority will be given to human-caused problems that impact natural community processes or areas inhabited by core species.

Action 1.1c: Acquire a digitized version of the Carrizo Plain Soil Survey (USDA Soil Conservation Service) for use with GIS.

Action 1.1d: Manage livestock grazing in a manner that does not create excessive water or wind erosion.

Potential Impact: Minimal general surface disturbing impacts are likely.

Mitigation: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

b. Air Quality

The CPNA has good air circulation and is situated above the 2000 foot restriction ceiling imposed by the APCD for smoke and dust control. Though pollution has not been significant, emissions, smoke and dust from management actions will be minimized to maintain visibility and protect human health and safety.

Goal 2: Maintain or improve air quality.

Objective 2.1: Conform with local, state and federal air quality and visibility requirements and encourage the reduction of emissions while conducting prescribed fires.

Action 2.1a: Avoid conducting prescribed fire when weather conditions are likely to result in smoke entering adjacent areas which exceed current air pollution standards (for example, the SJV Air Basin).

Action 2.1b: Avoid burning during high visitor use periods to maintain visibility and protect human health and safety. Examples of predictable high use days include three-day weekends, holidays, peak flowering periods and hunting season openings.

Action 2.1c: Use the best available methods to reduce emissions and protect human health and safety. Consult with specialists and experts as appropriate.

Action 2.1d: Use alternative energy when feasible and practice energy conservation to reduce pollutant generation.

Objective 2.2: Minimize dust generated from roads, livestock grazing and other land management activities.

Action 2.2a: Comply with local, state and federal PM-10 dust control rules.

Action 2.2b: Use the best available methods to reduce dust from existing roads, construction sites and land management practices. Consult with specialists and experts as appropriate.

Potential Impact: No impacts are expected.

Mitigation: No mitigation measures are necessary.

c. Hydrology

Protecting drainage patterns while allowing for free runoff of water and sediments is necessary to maintain hydrologic and ecological processes. Movement of surface water, and water and wind carried sediments, should follow natural courses as much as possible providing for redistribution of plants through natural dispersal mechanisms. Functioning springs maintain hydrologic processes and biodiversity critical to landscape stability in this arid environment.

Goal 3: Maintain and enhance hydrologic processes.

Objective 3.1: Protect or enhance habitat condition, water quality, plant community composition, and wildlife use for all springs, water sources, and drainages.

Action 3.1a: Complete spring and water source inventory by year three.

Action 3.1b: Initiate monitoring studies of springs and seeps to determine trends of plant community composition, water flows and water quality to evaluate management effectiveness.

Action 3.1c: Evaluate water source inventory and monitoring information to determine needs for habitat protection or habitat improvement development. Protect sensitive areas through fencing, water distribution to adjacent uplands and seeding or transplants.

Action 3.1d: Design spring improvements to maintain or improve wetland conditions.

Action 3.1e: File for Appropriative water rights where applicable.

Action 3.1f: Design and maintain roads and facilities to allow sheet and channel runoff. Protect active washes and alluvial fans from channelization.

Potential Impact: Minimal general surface disturbing impacts are likely.

Mitigation Measure: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

3. Biotic Communities

Goals and objectives for biotic communities within the CPNA are listed below. It is impossible for the managing partners to artificially manage all components of the biotic communities. Therefore, it is critical that ecological processes, including major disturbance events (such as fire and flood), be protected and restored to allow for rejuvenation of plant communities within a watershed context. In addition, the managing partners will focus management efforts on a core group of species, including listed, proposed, and candidate species, California species of special concern, California Native Plant Society (CNPS) lists, game animals, keystone species, endemic and other species integral to the fulfillment of the mission.

The CPNA is a complex mosaic of habitats and no single habitat type is optimal for all core species. Several species may achieve long-term, viable, self-sustainable populations in a relatively small percentage of the entire habitat available to them. This will allow for considerable management flexibility. If a single or small group of core species is being intensively managed, effects on other species and ecological processes will be minimized.

Many vegetation types have changed with the addition and dominance of aggressive, non-native annual plants. It is unknown how existing plant communities dominated by non-native species or future restored vegetative communities with an increased native component, provide suitable habitat for core species. Given the large area of the CPNA and the relatively patchy distribution of the special status species, considerable flexibility in developing and encouraging a mosaic of community types is possible with little potential for rapidly and irrevocably reducing recovery potential of any of the listed species.

Goal 1: Increase the importance of native species in CPNA communities and provide for all transitional states of native communities through the natural range of disturbances (fire, grazing, climatic events).

The distributions of these communities is best determined by the natural processes which influence community dynamics. Natural processes will determine native community distributions to the greatest extent practicable. Certain natural processes may be manipulated, such as frequency and intensity of fire and grazing, in the short-term to achieve immediate biotic community goals determined effective through research. Some high priority communities have been identified for specific actions all other communities will be representative across the landscape.

Objective 1.1: Mimic the range of natural processes and disturbances.

Action 1.1a: Implement the grazing, fire management and research actions described in the Habitat Management section.

Objective 1.2: Maintain representative shrub-scrub communities across the landscape to assure their continued existence.

Action 1.2a: Identify shrub-scrub stands to be maintained or enhanced.

Action 1.2b: Manage (or exclude) livestock grazing to maintain high-priority shrub-scrub stands and enhance all other stands as appropriate.

Objective 1.3: Sustain the integrity of natural vernal pool communities.

Action 1.3a: Avoid disturbance of natural vernal pools and the localized watershed required for their maintenance.

Action 1.3b: Implement grazing management (or exclusion) that will sustain vernal pool communities.

Action 1.3c: Develop protocols to monitor vernal pools.

Objective 1.4: Manage grasslands to increase the importance of native plants and promote full representation of native species.

Action 1.4a: Implement restoration activities as described in subsection a.

Action 1.4b: Promote a matrix of disturbances across the landscaped as described in the Habitat Management section.

a. Biotic Community Restoration and Reintroduction of Animals and Plants

The flora and fauna of the CPNA have undergone major compositional changes since the introduction of exotic plants and animals. Several communities are limited in distribution. Several species of plants and animals are particularly aggressive and are currently causing rapid changes in species composition. Many native species' populations have been reduced to very low levels particularly within the grassland community. Some species which had been locally extirpated, such as the pronghorn antelope and tule elk, have been successfully reintroduced. Other species may also be considered for reintroduction.

Goal 2: Increase the importance of native species within existing non-native communities as appropriate for current climatic conditions.

Restoring plant communities by increasing the frequencies of native species is a long-term goal. Initially, most restoration efforts will be within a research context in order to maximize the effectiveness of subsequent restoration methods while minimizing conflicts with achieving and maintaining self-sustaining populations of core species. Most current restoration work is on a relatively small-scale. Research on restoration methods will greatly add to knowledge of ecological function. Immediate steps are required to control the spread
of certain exotic species.

Objective 2.1: Reintroduce native plants and animals when appropriate.

The reintroduction or translocation of regionally or locally extirpated species can greatly accelerate community restoration. Reintroduced or translocated individuals could change current relationships between species, and between species and their environment. Reintroduced species may be genetically different than recent inhabitants. Within species genetic swamping (mixing or dominance) could alter a species' chances of long-term survival. This seems most likely to occur if the individuals used in the reintroduction are from significantly different or distant localities, factors which suggest a greater probability of genetic difference from recent inhabitants.

Action 2.1a: Develop a list of regionally and locally extirpated species and determine priorities for reintroduction. Assess habitat quality and environmental conditions to determine the probability of a successful reintroduction. Reintroduction benefits will be weighed against risks to other species and communities.

Action 2.1b: A reintroduction strategy will be cooperatively developed by the DFG, BLM, TNC and other experts, including USFWS, as appropriate. Strategies should be designed to detail population objectives being sought, to minimize the possible changes in genetic composition of species inhabiting the CPNA, to address contingencies should a population start to impact another species or plant community in adverse and unpredicted ways, and to outline monitoring strategies necessary to evaluate success of the reintroduction.

Action 2.1c: Explore options for increasing herd size and distribution of native ungulates.

Action 2.1d: Materials for plant propagation will be collected and used from within the same hydrographic region, Carrizo Plain or Cuyama Valley. Greenhouses or small nursery plots may be developed to accelerate the production of propagation materials. Five acres of seed plots and propagation facilities are needed.

Objective 2.2: Restore and maintain natural communities.

Action 2.2a: Initiate studies to further our understanding of soil-vegetation relationships and historical distributions of plant communities to help plan restoration efforts.

Action 2.2b: Establish additional test restoration plots throughout the CPNA to determine the most promising techniques for reintroducing native grass species, the factors (such as soil types) that influence community composition, and the affects of restoration efforts on native and core species. It is estimated that 30 acres of surface disturbance will result from seedling planting and 1000 acres from broadcasting seeding.

Action 2.2c: Identify opportunities for restoration by mapping roads and fuel breaks to be abandoned, previously cultivated fields, overgrazed areas and other areas where the vegetation community has been degraded of destroyed.

Objective 2.3: Maintain riparian zones in proper functioning condition to allow for the maintenance and development of natural riparian plant communities and basic riparian ecological functions.

Riparian communities are found primarily in the Caliente Range in association with springs. Many are degraded and need stabilization and improvement. The riparian vegetative communities are dominated by wild rye, red willow, Fremont cottonwood and various aquatic herbaceous plants.

Action 2.3a: Evaluate spring and intermittent stream riparian zones to determine state (proper functioning, at-risk or nonfunctioning, using guidelines as described in TR 1737-9: available at BLM, Bakersfield).

Action 2.3b: Develop strategy to improve "at-risk" and "nonfunctioning" riparian zones to proper function.

Action 2.3c: Accelerate riparian zone restoration by planting, where appropriate, local stock of cottonwood and willow trees. Natural re-establishment has occurred without human assistance in several drainages indicating that riparian zones may have extended beyond the foothills of the Caliente Range in the past. Around springs, planting trees may result in diminished standing water critical for wildlife. Planting around springs should be done only after evaluating the drinking water needs of resident wildlife. Riparian restoration will disturb an estimated 10 acres of land.

Action 2.3d: Water sources, wetlands and riparian areas affected by livestock and wild pigs will be fenced. Water diversions will divert the minimum amount necessary to maintain livestock or wildlife surface water. Float valves or other devices will be installed to control diversion amounts. Water for livestock use will be piped as far from the riparian area as practical. If possible, livestock water sources will be maintained year-long for use by wildlife.

Objective 2.4: Determine location and extent of populations of exotic species and implement a prioritized control strategy.

Action 2.4a: Conduct inventories of exotic species to assist in setting control priorities.

Action 2.4b: Determine the most efficient way to control exotic species.

Action 2.4c: Aggressively control invasive exotic plants such as tamarisk and yellow starthistle, as well as other exotic species considered a threat to biotic communities. Estimated disturbance for the life of the plan are 500 acres mowing, 5,000 acres for burning (25 acres of fire line), 200 acres for chemical application and 25 acres for hand removal. Some of these efforts may require re-treatment of the same physical area.

In order to control these species, mechanical, chemical and other accepted means will be explored. The use of chemicals to control exotic plants requires a detailed Environmental Analysis, and California State Office BLM and DFG approval. Chemical use has proven to be the most efficacious method in controlling tamarisk in some of California's desert environments, therefore high priority will be given to experimenting with this method.

Action 2.4d: Evaluate the need to control exotic animal species, such as red fox, wild pig and cowbirds.

Action 2.4e: Evaluate the threats and value of non-native tree species and eradicate when necessary. Generally, non-native tree species are considered undesirable because of possible competitive exclusion of native species.

No species are dependant on exotic trees on the CPNA. However, significant traditional use has been established for at least 100 years. When adequate sites are nearby, it is preferable to plant native trees and allow them to mature before removing non-spreading, non-native trees to give wildlife an opportunity to establish use of native species. If there are no suitable sites for the reintroduction of native species, the non-spreading, non-native individuals should be allowed to die out without being replaced. If these non-native trees are invading nearby areas, the seedlings, saplings and parent trees should be removed and replaced by native trees when appropriate.

Potential Impact: Use of herbicides to control exotic plant species could impact native plant species. Runoff or percolation into aquatic systems could impact aquatic invertebrates and vertebrates.

Mitigation: The USFWS, DFG, BLM, TNC and other experts will assist in developing an herbicide use strategy designed to minimize the risk of impacting non-target species. Possible mitigation measures include restricting herbicide choice to those as target-specific and biodegradable as possible, and using herbicides during dormant periods of the non-target species. A separate NEPA/CEQA disclosure document analyzing the affects of different alternatives, and addressing mitigation and cumulative impacts will be required.

Potential Impact: General surface disturbing impacts are likely to be minimal for inventory, reintroductions, or plant propagation facilities. It is estimated that approximately 5 acres, of 10 acres for the life of the plan, may be disturbed by animal capture and release activities.

Mitigation: Mitigation measures for general surface disturbing impacts should be adequate.

Potential Impact: General wildlife harassment impacts are possible in any inventory effort. These impacts should be minimal and readily reduced to insignificant levels.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated from this action.

Goal 3: Achieve and maintain sustainable populations of all extant, non-listed native species.

Objective 3.1: Reduce impacts to non-listed native species through implementation of management and research actions.

Action 3.1a: A scoping process is described in section IIIa. which details a strategy for determining when impacts will be considered significant.

Objective 3.2: Provide for the natural expansion and fluctuations of populations of non-listed native species.

Species' populations expand and contract naturally in response to climate, disease, fire and other factors. The magnitude of change can be influenced by management. In addition, management decisions made at critical periods, such as a prolonged drought, could reduce or eliminate a species' opportunities to repopulate a significant area. This plan intends to avoid this situation when the area is necessary for achieving a long-term, self-sustaining population.

Action 3.2a: Monitor changes in abundance and distribution patterns at known locations of non-listed native species. This level of monitoring is intended to provide an early warning to possible detrimental effects to species in relation to management and to provide guidance in setting up more rigorous monitoring or research.

Action 3.2b: Design potentially disturbing activities to allow continued expansion of non-listed native species into new areas or their return to historically occupied areas. These management activities should not block the movement of individuals or propagules or significantly reduce the probability of successful expansion.

Potential Impact: Minimal general surface disturbing impacts are possible.

Mitigation: The minimal levels of surface disturbing and harassment impacts should be adequately mitigated by the application of standard operating procedures, and the general surface disturbing and wildlife harassment mitigation measures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

b. Core Plant and Animal Species

A primary management emphasis of the CPNA is to contribute to the recovery of listed species and reduce the likelihood that other species will need to be listed in the future. Besides special status species (listed, proposed, candidates, species of special concern, CNPS rare), a number of species are of particular scientific, conservation, recreation or aesthetic interest. Management consideration may be

given to these species when not in conflict with the overall goals for special status species or community restoration.

Efforts to enhance species populations will emphasize natural processes, without maximizing populations of any one species. A wide variety of methods are available to provide shelter, perches, water, food and nesting sites. Generally, these methods will be avoided.

The CPNA will be managed to achieve long-term, viable, self-sustaining populations of listed species. If this is accomplished, the Carrizo will have contributed as much as possible to the eventual recovery of the current suite of listed species.

Goal 4: Contribute to the recovery of listed species by achieving long-term, viable populations of all extant listed species within the CPNA, outside of captivity.

In addition to the objectives and actions described below, specific actions designed to maintain and enhance ecosystem function have been given in the previous section. To achieve this goal, it is imperative that the habitat in which these species live provide for their needs in perpetuity.

Objective 4.1: Extant locations and habitat features of listed species will be managed to allow for their continued existence and maintenance of viability. The continued functioning of the plant community is critical for these listed species.

Action 4.1a: Adverse impacts to listed species and their habitats will be minimized to the greatest extent feasible. A scoping process is described (section III a.) which details a strategy for determining when impacts will be considered significant.

Objective 4.2: Provide for the natural expansion and fluctuations of populations of listed species consistent with species recovery.

Action 4.2a: Monitor changes in abundance and distribution of listed species at known locations. This level of monitoring is intended to warn of possible detrimental effects management of activities and to provide guidance in setting up more rigorous monitoring or research.

Action 4.2b: Design potentially disturbing activities to allow continued expansion of listed species into new areas or their return to historically occupied areas.

Objective 4.3: Reduce human-caused hazards to core species.

Action 4.3a: Identify, prioritize and reduce or alleviate human-caused hazards to core species.

Potential Impact: Monitoring listed species may require handling of individuals of listed species. For animals, this can result in harassment, increased susceptibility to predation and climatic conditions, burrow collapse and direct mortality. Listed plants can be subjected to site surface disturbance, increased introduction of aggressive non-native species, soil compaction and breakage.

Mitigation: Any person handling listed species must have a permit issued by the DFG and/or the USFWS Service. All persons monitoring listed species or monitoring in the vicinity of listed species will be advised of the need to reduce surface disturbance and harassment to the maximum extent possible.

Goal 5: Develop an understanding of the distribution and abundance of core species and the mechanisms influencing changes in either parameter.

Many of the management actions included in this plan are dependent upon knowledge of trends in sensitive species populations and habitat condition, native plant associations and habitat requirements, plant-animal associations, historical information and basic biological and life history information. Research and monitoring on core species is necessary to ensure that management actions are effective and consistent with management goals. Potential impacts anticipated from proposed research will be resolved on a case by case basis. Research proposals will be considered except those potentially impacting on-going research and those that may potentially interfere with long-term, self-sustaining populations of core species.

In this discussion, "inventory" is considered a systematic determination of species' occurrence and abundance and is an essential first step in research and monitoring.

Objective 5.1: Determine historic and current distribution and abundance of core species and monitor changes in both parameter relative to soils, plant associations, past and present land uses and climatic vagaries.

Action 5.1a: Compile and centralize all known data on historic distribution and abundance. Encourage further investigation into past vegetative community species composition.

Action 5.1b: Encourage further pollen analysis to determine this technique's efficacy in describing current vegetative community species composition.

Action 5.1c: Inventory current distribution and abundance of core species relative to soils, plant associations and past and present land uses.

Action 5.1d: Establish a procedure to monitor changes in distribution and abundance at appropriate time intervals and relative to climatic vagaries, and extraordinary events.

Action 5.1e: Develop field observation forms for use by all cooperators.

Action 5.1f: Develop and maintain a database on distribution and abundance and make the information available to cooperators and interested individuals.

Objective 5.2: Develop an understanding of demographics and habitat requirements of the core species.

Action 5.2a: Determine estimates of and variances in demographic parameters for each species.

Action 5.2b: Determine habitat requirements for the core species.

Potential Impact: Monitoring of impacts to listed species may require handling listed species. For animals this can result in harassment, increased susceptibility to predation and climatic conditions, burrow collapse and direct mortality. Listed plants can be subjected to site surface disturbance, increased introduction of aggressive non-native species, soil compaction and breakage.

Mitigation: All persons engaged in monitoring listed species or monitoring in the vicinity of listed species will be advised of the need to reduce surface disturbance and harassment to the maximum extent possible.

Potential Impact: Monitoring for the effects of management actions on non-listed featured species will cause minimal general surface disturbing and harassment impacts.

Mitigation: The minimal levels of surface disturbance and harassment impacts should be adequately mitigated by the application of the standard operating procedures, and the general surface disturbing and wildlife harassment mitigation measures.

c. Habitat Management

1. Fire

Fire is a naturally occurring element within the ecosystem, and some species are particularly adapted to its effects. Fire has been used by humans throughout time to accomplish management objectives, and has the potential to assist in achieving the stated management goals for biotic communities and core species.

Goal 6: Develop an understanding of the role of fire in the CPNA.

Fire has the potential to contribute to the goals of the CPNA as well as to adversely impact certain plant communities and species within these communities. It is essential for proper management of the CPNA to understand the natural role fire plays in the ecosystem.

Objective 6.1: Develop a fire history for the CPNA.

Action 6.1a: Determine the extent of fire use by Native Americans.

Action 6.1b: Determine the historical extent, intensity, interval season, and duration of fires.

Objective 6.2: Develop an understanding of the effects of fire and suppression on current biotic communities and species of plants and animals.

Action 6.2a: Establish post-fire monitoring sites on areas burned by wildfires and adjacent unburned areas. It is estimated that 50,000 acres will burn as a result of wildfire resulting in fire line construction of 25 acres during the life of this plan.

Action 6.2b: Conduct prescribed burns to answer specific questions regarding fire's affects on plant and animal communities. These studies should include unburned controls as well as data collected both before and after the prescribed burn. It is estimated that 30,000 acres of prescribed fire will be conducted resulting in fire line construction of 10 acres during the life of this plan.

Action 6.2c: Design studies to assess the affects of various suppression and prescribed burn pretreatment methods (fire line construction) on plants and animals.

Potential Impact: Monitoring for the effects of fire on communities and individual species will have minimal general surface disturbing and harassment impacts.

Mitigation: The minimal levels of surface disturbing and harassment impacts should be adequately mitigated by the application of the standard operating procedures and the general surface disturbing and wildlife harassment mitigation measures.

Potential Impact: Prescribed fire may escape and spread into areas with fire sensitive communities.

Mitigation: Prescribed fires require burn plans which detail weather and fuel moisture parameters and personnel and equipment necessary for adequate protection. These measures are generally adequate to assure a burn is held within prescription.

Potential Impact: Prescribed fires could kill individual listed species.

Mitigation: Cooperators and invited experts will be consulted prior to prescribed burns to determine if any species are likely to be adversely affected by the proposed burn. If the likelihood of adverse impacts is high, a small scale burn testing the efficacy of mitigation measures and fire prescription will be conducted.

Goal 7: Manage fire to derive maximum biological benefit while minimizing impacts to resources.

Objective 7.1: Coordinate wildfire suppression and prescribed burning activities.

Action 7.1a: Develop a comprehensive fire management plan encompassing fire safety, sensitive resources (biotic and cultural), and agency coordination.

Objective 7.2: Presuppression and suppression activities will be implemented to reduce the adverse impacts of fire management.

Presuppression and suppression activities are designed to manage both intended and unintended fires to reduce impacts to sensitive resources. Presuppression activities generally are intended to reduce fire hazards.

Action 7.2a: Presuppression activities will be carried out in a manner, based on research results, that will minimize negative impacts to resources.

Action 7.2b: Allow wildfires to burn in designated areas to allow re-establishment of natural fire intervals and to minimize negative impacts to resources during fire suppression activities, as described in the protection strategy map (Technical Appendix).

Potential Impact: General surface disturbance and wildlife harassment impacts are expected from suppression activities. Fire may result in long-term type-conversion of some communities such as valley saltbush scrub, and may justify aggressive fire suppression and presuppression.

Mitigation: The surface disturbance and harassment impacts should be adequately mitigated by the application of the standard operating procedures, and the general surface disturbing and wildlife harassment mitigation measures.

2. Livestock Grazing

Continue livestock grazing to remove standing biomass, reduce the importance of non-native species, and enhance the re-establishment of native species while encouraging research to determine if livestock grazing can benefit the natural communities and listed species.

Goal 8: Implement a grazing program designed to serve the above purposes.
Objective 8.1: Improve coordination and efficiency of livestock management.

Action 8.1a: Continue the grazing program as detailed in section II, for 6 years, or two full rotations, that began December 1, 1993, or until research findings indicate a need for change.

Action 8.1b: Where feasible and desirable to meet management objectives, continue to consolidate grazing management on all CPNA lands under a single lessee or permittee.

Action 8.1c: On BLM lands, lessees will be allowed to enter into livestock use agreements with local livestock owners as provided by 43 CFR 4130.5(d).

Action 8.1d: On DFG lands, a single permittee may be allowed to graze livestock as provided by Section 630 (b)(75), Title 14, CCR.

Objective 8.2: Monitor livestock grazing to ensure compliance with prescribed resource thresholds.

Action 8.2a: Determine residual dry matter (mulch) levels through the comparative yield methods described in the Technical Appendix, approximately three weeks before turn-out date to determine range readiness. Monitor mulch again approximately three weeks before the end of the authorized season for each grazed pasture, or as observations indicate resource thresholds are approaching.

Action 8.2b: For each grazed pasture, determine the percent utilization of key perennial plant species using methods described in the Technical Appendix at mid-season and at take-off time. If mid-season use is approaching maximum, check utilization levels weekly.

Action 8.2c: Monitor, and determine the importance of livestock disturbance to GKR "haystacks".

Action 8.2d: Document unauthorized grazing, unauthorized range improvements or maintenance activities, and initiate corrective action.

Action 8.2e: Collect actual grazing use information.

Objective 8.3: Develop an understanding of the effects of grazing on current biotic communities and plant and animal species.

Action 8.3a: Establish monitoring sites on grazed areas and adjacent ungrazed areas.
Action 8.3b: Pursue stable funding source to address questions regarding the effectiveness of grazing in meeting goals.

Action 8.3c: Design studies to assess the affects of the proposed grazing program on plants and animals.

Action 8.4d: Identify replicate pastures to be grazed annually to the 500 lbs./acre mulch level prescription to evaluate the response of native and non-native plant species to a consistent grazing treatment.

Potential Impact: Moderate levels of general surface disturbing impacts are likely as a result of constructing and maintaining range improvements (pipelines, water tanks, water troughs, fences, corrals, access roads).

Mitigation: The moderate level of these impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

Potential Impact: Fences can impact native ungulates by restricting movements, entraining Russian thistle and altering predator-prey relationships.

Mitigation: Fences will be minimized and constructed to allow adequate control of livestock while also allowing for free movement of native ungulates. Russian thistle may need to be removed from certain fence lines.

Potential Impact: The CPNA's grasslands have few natural perches for predatory birds. Fences, exclosures and power lines, however, provide abundant perches within this habitat and have done so for decades. The action items should be adequate to address these impacts.

Mitigation: The amount of grassland habitat affected by the addition of perches will be minimized.

Potential Impact: Historically, intensive livestock grazing inadvertently furnished suitable habitat for mountain plovers. The livestock management program described in this plan, above average precipitation and lack of natural ecosystem processes such as fire, result in increased height and density of vegetation which reduces the amount of roosting and foraging habitat available.

Mitigation: Livestock use on the Phelan pasture will not be altered except as directed by research needs, and until such research indicates that a change would not cause jeopardy to mountain plovers. It is expected that increased prescribed fire activities, wildfires and additional grazing research pastures (sub-section d - Research and Monitoring) will provide additional areas for mountain plover use.

d. Research and Monitoring

Information on the processes and components of these communities are necessary to guide the management of the CPNA. In order to develop reliable knowledge in the most efficient manner possible, it is important to design research to address management questions with the use of controls, adequate sample sizes and measurements of the variables of interest both before and after changes are made.

Goal 9: Develop an understanding of the naturally occurring ecological processes affecting plant and animal communities.

In order to make informed management decisions it is necessary to have an understanding of how various ecological processes influence the abundance and distribution of plant and animals both with and without various management strategies in place. The watershed, stratified by soil type, is probably the most appropriate scale in the initial stages of this investigation. Changes in distribution and abundance of community components can be correlated to climate, extraordinary events and management. This background will help direct research to the most critical issues.

Objective 9.1: Develop and update a map of known vegetative community boundaries at the 1: 24,000 scale, correlated to soil type.

Action 9.1a: Adopt a standard vegetation classification scheme. Acquire aerial photo coverage every 5 years unless extraordinary events occur. Ground-truth the plant community maps developed from aerial photographic interpretation. Make the third-order soil survey available at the Painted Rock Ranch as well as the Bakersfield District Office and correlate to vegetative communities.

Objective 9.2: Develop an understanding of the factors affecting the sustainability of the CPNA natural communities.

Action 9.2a: Develop and maintain an inventory of all species inhabiting Carrizo Plain.

Action 9.2b: Initiate and commit to long-term studies of the factors influencing community composition, structure and function.
Priority should be given to well represented habitats that are inadequately studied by core species research. Because resources are limited, study areas should be relatively small and scattered geographically to assure representation of the habitat in question.

Objective 9.3: Develop an understanding of the role of extraordinary events as an ecological process. Such events include fire, catastrophic runoff, wind and dust storms, prolonged drought and disease epidemics. The nature of these events precludes detailed advanced planning. Studies will need to be designed rapidly in order to take full advantage of research opportunities.

Action 9.3a: Map all major perturbations (fire, floods, disease episodes) of vegetative communities. This allows for the development of a complete history of disturbance events necessary to describe the importance of these events to plant and animal communities

Action 9.3b: Determine the function of extraordinary events in plant and animal community dynamics. Each event will be evaluated to determine the potential for research and how the research would fit into high priority items. Determine the research needs using the managing partners and invited experts. When possible standard monitoring methods will be used.

Potential Impact: Minimal general surface disturbing impacts are likely during the course of monitoring.

Mitigation: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.
Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

Goal 10: Monitor and evaluate the effectiveness of management in meeting biotic community goals.

Adaptive management techniques will be employed to ensure that biotic community goals will be achieved.

Objective 10.1: Determine if management activities cause large population fluctuations or seriously impair community function. This level of monitoring is intended to show large scale impacts to species and their communities in a timely manner. Smaller scale impacts usually require more detailed study to determine effects.

Action 10.1a: Each biotic community will receive at least seasonal field observation to assess resource conditions and management effect.

Action 10.1b: Recommendations based on monitoring results will be employed as measures to help correct the causes leading to impacts.

Objective 10.2: Assess the effectiveness of management in achieving stated project goals. This level of monitoring will generally take more detailed study than that described in Objective 2.1.

This monitoring will help determine whether species are achieving long-term, self-sustainability and if communities are functioning properly.

Action 10.2a: Develop and maintain a list of monitoring needs in priority order. Priority should be based on the extent and intensity of anticipated impacts, and the level of risk ascribed to a species or community.

Action 10.2b: Conduct monitoring for high priority issues. The results of these studies will be used to evaluate current and future management actions.

Potential Impact: Minimal general surface disturbing impacts are likely during the course of monitoring.

Mitigation: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts and by the standard operating procedures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

4. Cultural Resources

Cultural resources, a vital part of California's heritage, are finite, fragile, irreplaceable and provide a wide range of public, scientific and conservation uses. While each managing partner shares in the commitment to these resources, responsibility varies as different laws and regulations apply. The CPNA provides an opportunity for public education, interpretation, awareness and appreciation of cultural resources and Native American values. Increasing public interest creates management challenges for the protection of these sensitive non-renewable resources.

Goal 1: Protect cultural resources.

Objective 1.1: Monitor impacts to cultural resources and the effectiveness of protection strategies.

Monitoring and patrol will consist of scheduled inspections by CPNA personnel and volunteers. Documents or visual recording techniques will be utilized.

Action 1.1a: Complete cultural resource inventories on 5% of the CPNA by plan-year three. Acquiring this data is the first step toward formalizing a programmatic agreement with the SHPO. After the initial inventory work has been completed, we will continue to inventory as possible.

Action 1.1b: Identify cultural sites threatened by unauthorized excavation, collection, vandalism or other forms of destruction. Initiate appropriate protection, mitigation or treatment.

Action 1.1c: Painted Rock will be monitored by the managing partners, archaeologist or designated individuals or groups at least twice a month.

Action 1.1d: Monitoring and patrolling of specific sites will be dependant on site sensitivity, visitation rates, and accessibility.

Action 1.1e: Inventory historic properties, such as ranch buildings, mining equipment and farm implements.

Objective 1.2: Stabilize, reconstruct, restore, maintain and protect significant cultural properties appropriate to conditions of the site.

Action 1.2a: In cooperation with Native Americans, detail the types of maintenance desirable at Painted Rock. Older graffiti probably will not be altered but new defacement will be evaluated for remediation.

Action 1.2b: Identify significant historic buildings and structures which are unstable, unsafe or threatened to the point where immediate treatment is needed. Develop an agreement with SHPO and the Advisory Council of Historic Preservation (ACHP) for treatment of the threatened properties. Implement appropriate protection or treatment.

Action 1.2c: Develop an interim cultural preservation and management plan during plan year one.

Action 1.2d: Develop a long-term cultural preservation and management plan by plan year three .

Action 1.2e: Painted Rock will be closed to public access from March 1 to July 15 for the protection of sensitive wildlife and cultural resources. Access by guided tours during this period will be provided by the managing partners.

Action 1.2f: The Sulphur Spring site will be closed due to the extremely fragile nature of the site. Access will be allowed for approved research projects, cultural site monitoring and patrolling, and Native American access per request. Approval is required from the Caliente Area Manager or the archaeologist for access to the site.

Action 1.2g: Nominate Painted Rock and associated sites to the National Register of Historic Places as an archeological district.

Action 1.2h: Relocate significant historic implements to a secure location or secure in place. A representative example of different implements shall be preserved and if practical relocated to the Goodwin Education Center or some designated location for interpretation. Implements with no historic value are suitable for removal from the Carrizo.

Potential Impact: General surface disturbing impacts are not likely to exceed 5 acres for the life of the plan.

Mitigation Measure: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.

Potential Impact: In order to protect sensitive cultural resources, access to sites may be limited or denied to researchers. A potential loss of research opportunities and data could occur.

Mitigation: Research proposals may be authorized after project alteration and/or guided entry onto the site. These measures should eliminate the possibility of inadvertent damage to cultural resources.

Goal 2: Provide an opportunity for partnerships, research, interpretation, and education for the public and the scientific community.

Objective 2.1: Solicit and encourage partnerships, research, interpretation, and educational efforts associated with cultural resources.

The managing partners lack funding and staff to conduct all research and educational needs. Partnerships will be carefully evaluated and established in order to carry out those activities. Evaluation criteria and stipulations for partnerships are given in Appendix C.

Action 2.1a: All cultural research projects will be coordinated through BLM. Managing partners and Native American groups and individuals will be consulted prior to approval.

Action 2.1b: Solicit grants, outside funding and, when appropriate, volunteers to conduct research in oral history, ethnography and ethnohistory, curate photos, publications, documents and records, and conduct inventories and monitoring.

Action 2.1c: Compile inventory data, and enter into databases and GIS.

Action 2.1d: Establish a dialogue and share information with Native American and ethnic groups that have cultural ties to the CPNA to compile an oral and written history.

Potential Impact: General surface disturbing impacts are not likely to exceed 5 acres for the life of the plan.

Mitigation Measure: The minor impacts will be adequately addressed by the mitigation measures described for the general surface disturbing impacts, and by the standard operating procedures.

Potential Impact: Minimal general wildlife harassment impacts are possible.

Mitigation: The measures described above should be adequate for the minimal level of disturbance anticipated.